

Abstract

This research en-titled the Guidelines for Building Evaluation, Design and Renovation to Improve Fire Safety focuses on the design of assembly buildings comparing with the typical design in the context of Thai Society. It mainly aims to study the building evacuation performance and to propose guidelines for building evaluation, design and renovation which can be applied to fire safety standards.

This research can be categorized into two parts which are documentary study, an in-depth interview and an analysis of case studies. In addition, it focuses on an experimental research on evacuation time in theater halls and exhibition halls varied by door types. The study was conducted through literature reviewing, semi-structured interview, and evacuation algebraic equation analyzed through software. The data was collected by purposive sampling varied by 8 types of floor plans in 3 assembly buildings which are: 1) BITEC Bangkok International Trade and Exhibition Centre; 2) Queen Sirikit National Convention Center; and 3) IMACT Muang Thong Thani. The process attends particularly to calculate the evacuation time through Simulex software.

It was found that every assembly hall has experienced similar problems in fire evacuation. The problem is the unrelated position between furniture orientation and emergency gateway. Moreover, the examination of passive design indicates that assembly buildings are usually constructed with only one access door which helps controlling the enter and exit systems. Fire exit is, therefore, improperly established. As well, the analysis discovered that the wider the door is, the more performance of evacuation increases. The flexible main access door, thus, can reduce the evacuation time. However, the position of the door should be related to furniture orientation. The main circulation should make a beeline for the door. In addition, there should be another door in the corner of the room. In summary, for evaluation, renovation and design of assembly buildings must be concerned with 3 factors: 1) an architectural design focuses on the orientation of fire escape ways which should be concerned as avoiding the dead end space; 2) fire safety equipments which are emergency way to support the work of fireman and equipments in active design for emergency; and 3) external environments such as hydrant position and road size around the project.